

CLAIMS

1. Process for the preparation of primary amines of formula (I):



in which

R₃ represents

- 10
- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more hydroxyl groups, amino groups, alkoxy groups including from 1 to 6 carbon atoms or aryl groups including from 6 to 10 carbon atoms, the aryl groups optionally being substituted by one or more linear or branched alkyl groups including from 1 to 6 carbon

15

 - atoms or by one or more alkoxy groups including from 1 to 6 carbon atoms or by one or more phenyl groups,
 - a cycloalkyl group including from 5 to 7 carbon atoms which is optionally substituted by one or more linear or branched alkyl groups including from 1 to 6 carbon atoms by or one or more alkoxy groups including from 1 to 6

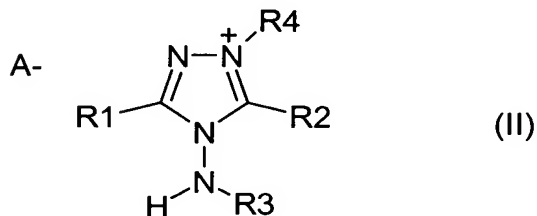
20

 - carbon atoms,
 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more linear or branched alkyl groups including from 1 to 6 carbon atoms, by one or more alkoxy groups including from 1 to 6

25

 - carbon atoms or by one or more phenyl groups,

by reaction of a triazolium salt of formula (II):



30 in which

R1 and R2, which are identical or different, represent

- hydrogen,
- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, $-(\text{OCH}_2\text{CH}_2\text{O})_n\text{R}'''$ groups in which n represents an integer ranging from 1 to 4 and R''' is a linear or branched alkyl group including from 1 to 4 carbon atoms, -O-aryl groups including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, or -O-aralkyl groups including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups;
- an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups;
- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,

R3 has the meaning already indicated,

R4 represents

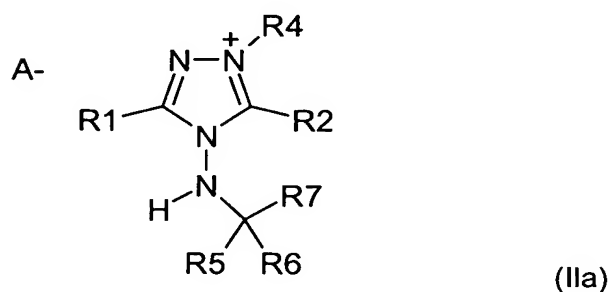
- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by a -COOH radical or a -COOR''' group in which R''' represents a linear or branched alkyl radical including from 1 to 4 carbon atoms,
- an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or a -COOH radical or a -COOR''' group in which R''' represents a linear or branched alkyl radical including from 1 to 4 carbon atoms,
- a residue of an organic polymer functionalized by an alkylating group,

A represents

- a halogen,
- an alkylsulphonate group including from 1 to 6 carbon atoms which is optionally substituted by one or more halogen groups,
- an arylsulphonate group including from 6 to 10 carbon atoms which is optionally substituted by one or more halogen groups or linear or branched alkyl groups including from 1 to 4 carbon atoms,
- an alkyl sulphate group including from 1 to 6 carbon atoms,
- a hydrogen sulphate group,
- a hemisulphate group,
- a perchlorate group, or
- a hydroxide group,

with a hydride, to obtain the amine of formula (I), which is isolated, if desired.

2. Process according to Claim 1, characterized in that the R3 group comprises an asymmetric carbon α to the nitrogen.
3. Process according to Claim 1 or 2, characterized in that the triazolium salt of formula (II) corresponds to the formula (IIa):

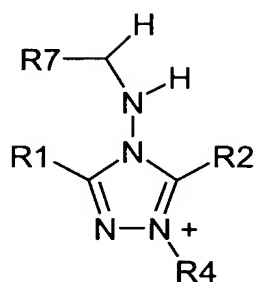


in which

- R1, R2, R4 and A have the meaning already indicated and R5 represents

- a hydrogen,
- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,

- a cycloalkyl group including from 3 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,
 - 5 - an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
 - 10 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- R6 represents
- 15 - a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,
 - 20 - a cycloalkyl group including from 3 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,
 - 25 - an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
 - 30 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
 - 30 - an aminotriazolium group of formula



A-

(IIb)

in which R1, R2, R4 and A have the meaning already indicated,

5 R7 represents

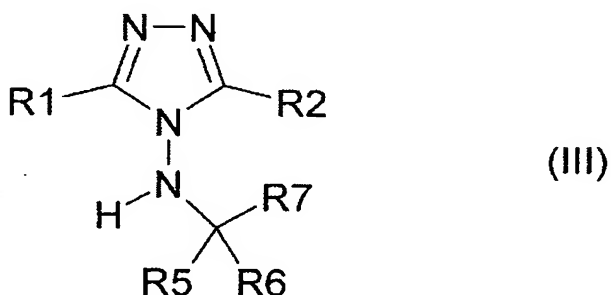
- a hydrogen,
- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,
- 10 - a cycloalkyl group including from 3 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,
- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- 15 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, or
- 20

25 R5 and R6 can form, together with the carbon atom to which they are bonded, a ring comprising 5 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,

it being understood that the carbon carrying the R5, R6 and R7 radicals must be asymmetric.

30

4. Process according to one of Claims 1 to 3, characterized in that the compound of formula (II) corresponds to the formula (IIa) defined above in Claim 3 and, in addition, the said compound of formula (IIa) is prepared by reaction of a compound of formula (III):

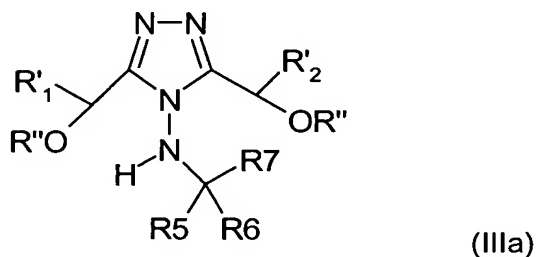


in which

R1, R2, R5, R6 and R7 have the meaning already indicated in Claim 3,

with an agent for the quaternization of a nitrogen, to produce the compound of formula (IIa), which is isolated, if desired, or which is employed directly in the following stage.

5. Process according to one of Claims 1 to 4, characterized in that the compound of formula (II) corresponds to the formula (IIa) defined above in Claim 3 and, in addition, the said compound of formula (IIa) is prepared by reaction of a compound of formula (IIIa):



in which

R5, R6 and R7 have the meaning already indicated in Claim 3,

R'1 and R'2 represent

- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms,
- 5 - an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, or
- 10 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, and

R'' represents

- hydrogen,
- 15 - a linear or branched alkyl group including from 1 to 6 carbon atoms,
- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- 20 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- 25 - a $-(\text{CH}_2\text{CH}_2\text{O})_n\text{R}'''$ group in which n represents an integer ranging from 1 to 4 and R''' is a linear or branched alkyl group including from 1 to 4 carbon atoms,

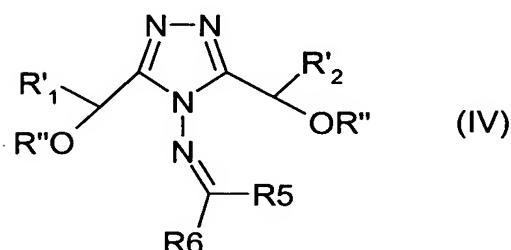
30 with an agent for the quaternization of a nitrogen, to produce the compound of formula (IIa), which is isolated, if desired, or which is employed directly in the following stage.

6. Process according to Claim 3, characterized in that the compound of formula (IIIa) is additionally prepared by reaction of an organometallic compound of
- 35 formula

R7-M

in which R7 has the meaning already indicated in Claim 3 and M represents an MgX or CeX₂ group in which X represents a halogen atom and M represents a metal, such as Li, Cu or (1/2) Zn,

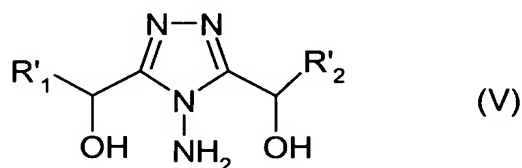
with a compound of formula (IV)



in which R'1, R'2 and R'' have the meaning already indicated in Claim 4 and R5 and R6 have the meaning already indicated in Claim 3, it being understood that, when R'' is a hydrogen, at least one of R5 and R6 is an optionally substituted aryl group,

to produce the compound of formula (IIIa), which is isolated, if desired, or which is employed directly in the following stage.

7. Process according to Claim 6, characterized in that the compound of formula (IV) is prepared by etherification and reaction of a compound of formula (V):



in which R'1 and R'2 have the meaning already indicated in Claim 4, with a compound of formula



in which R5 and R6 have the meaning already indicated in Claim 3,

to produce the compound of formula (IV), which is isolated, if desired, or which is employed directly in the following stage.

5

8. Process according to Claim 7, characterized in that the etherification takes place before the reaction of the compound of formula (V) with the compound of formula $O=CR_5R_6$.

10

9. Process according to Claim 7, characterized in that the etherification takes place after the reaction of the compound of formula (V) with the compound of formula $O=CR_5R_6$, it being understood that at least one of R5 and R6 represents an optionally substituted aryl group.

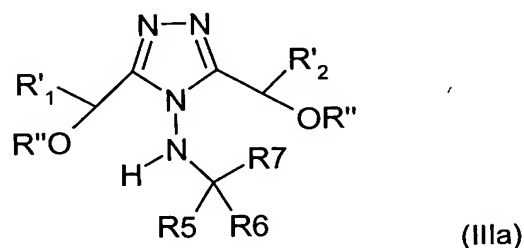
15

10. Process according to Claim 5, characterized in that the compound of formula (IIIa) is additionally prepared by reduction by the action of a metal hydride on a compound of formula (IV) defined above in Claim 6 or by hydrogenation of the said compound of formula (IV), it being understood that R5 cannot, in this case, represent hydrogen.

20

11. As novel intermediates for preparing an amine of formula $H_2N-CR_5R_6R_7$, the following compounds of formula (IIIa):

25



in which

R'1 and R'2 represent methyl groups,

30

R'' represents

- a linear or branched alkyl group including from 1 to 6 carbon atoms,

- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- 5 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, or
- 10 - a $-(\text{CH}_2\text{CH}_2\text{O})_n\text{R}'''$ group in which n represents an integer ranging from 1 to 4 and R''' is a linear or branched alkyl group including from 1 to 4 carbon atoms,

R5 represents

- a hydrogen,
- 15 - a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,
- a cycloalkyl group including from 3 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,
- 20 - an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- 25 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,

30

R6 represents

- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,
- 35 - a cycloalkyl group including from 3 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon

atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,

- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- a $-\text{CH}_2\text{OR}''''$ group in which R'''' represents hydrogen, a linear or branched alkyl radical including from 1 to 4 carbon atoms or a benzyl radical,

R7 represents

- a hydrogen,
- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,
- a cycloalkyl group including from 3 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,
- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, or

R5 and R6 can form, together with the carbon atom to which they are bonded, a ring comprising from 5 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,

it being understood that the carbon carrying the R5, R6 and R7 radicals must be asymmetric,

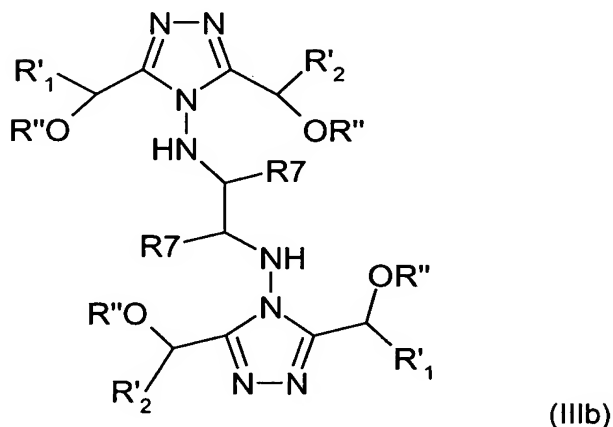
with the exception of the following compounds of formula (IIIa):

5

R'1, R'2	R''	R5	R7	R6
CH ₃	CH ₃	H	Phenyl	p-Toluene
CH ₃	CH ₃	H	CH ₂ CH ₂ -Phenyl	p-Cl-Phenyl
CH ₃	CH ₃	H	CH ₂ CH ₂ -Phenyl	Phenyl
CH ₃	CH ₃	H	CH ₂ -Phenyl	p-Cl-Phenyl
CH ₃	CH ₃	H	CH ₂ -Phenyl	Phenyl
CH ₃	CH ₃	H	p-Toluene	p-Cl-Phenyl

12. As novel intermediates for preparing an amine of formula H₂N-CR₅R₆R₇, the following compounds of formula (IIIb):

10



in which

R'1 and R'2 represent methyl groups,

15

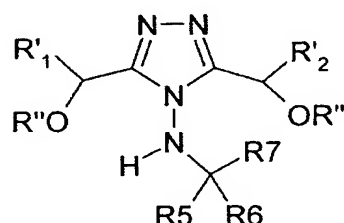
R'' represents

- a linear or branched alkyl group including from 1 to 6 carbon atoms,
- a group of the $-(CH_2CH_2O)_nR'''$ type where $n = 1, 2, 3$ or 4 and where R''' represents a linear or branched alkyl group including from 1 to 4 carbon atoms,

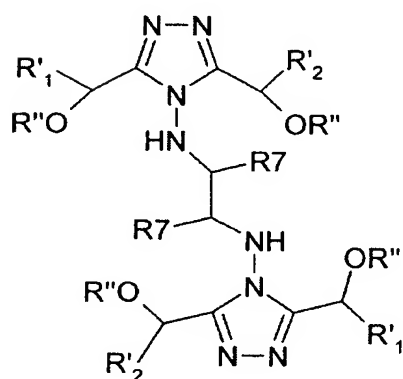
- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, and

R7 has the meaning already indicated in Claim 11.

13. As novel intermediates for preparing an amine of formula $H_2N-CHR_6R_7$, the following compounds of formulae (IIIa) and (IIIb):



(IIIa)

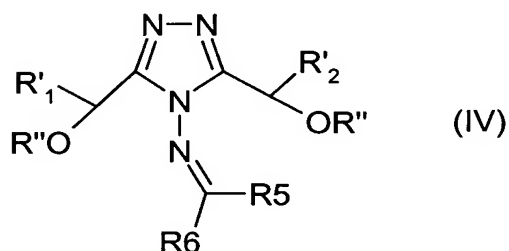


(IIIb)

- 4-[(R)-1-Ethyl-2,2-dimethoxyethylamino]-(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazole
- 4-[(S)-1-Ethyl-2,2-dimethoxyethylamino]-(S,S)-3,5-bis(1-ethoxyethyl)-1,2,4-triazole

- 4-[(R)-1-Ethyl-2,2-dimethoxyethylamino]-(S,S)-3,5-bis(1-ethoxyethyl)-1,2,4-triazole
- 4-(1-Phenyl-2,2-dimethoxyethylamino)-(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazole
- 5 - 4-(1-Ethyl-2,2-dimethoxyethylamino)-(S,S)-3,5-bis(1-(2-methoxyethyl)ethyl)-1,2,4-triazole
- 4-(1-Ethylbutylamino)-(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazole
- 4-(1-Ethylisobutylamino)-(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazole
- 4-(1-Phenylpropylamino)-(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazole
- 10 - 4-(1-Phenylethylamino)-(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazole
- (Hexyl-3,4-diamino)-4,4'-bis[(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazole].

14. As novel intermediates for preparing an amine of formula $H_2N-CR_5R_6R_7$, the
 15 following compounds of formula (IV):



- in which R'1 and R'2 represent methyl groups,
 20 R'' represents
- hydrogen,
 - a linear or branched alkyl group including from 1 to 6 carbon atoms,
 - an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon
 - 25 atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon
 - 30 atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, or

- a $-(\text{CH}_2\text{CH}_2\text{O})_n\text{R}'''$ group in which n represents an integer ranging from 1 to 4 and R''' is a linear or branched alkyl group including from 1 to 4 carbon atoms,

5 R5 represents

- a hydrogen,
- a linear or branched alkyl group including from 1 to 6 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,
- 10 - a cycloalkyl group including from 3 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,
- an aryl group including from 6 to 10 carbon atoms which is optionally
15 substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- an aralkyl group including from 7 to 16 carbon atoms which is optionally
20 substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,

R6 represents

- a linear or branched alkyl group including from 1 to 6 carbon atoms which is
25 optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, hydroxyl groups or amino groups,
- a cycloalkyl group including from 3 to 7 carbon atoms which is optionally
substituted by one or more alkoxy groups including from 1 to 6 carbon
atoms or linear or branched alkyl groups including from 1 to 6 carbon
30 atoms,
- an aryl group including from 6 to 10 carbon atoms which is optionally
substituted by one or more alkoxy groups including from 1 to 6 carbon
atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms
or phenyl groups,
- 35 - an aralkyl group including from 7 to 16 carbon atoms which is optionally
substituted by one or more alkoxy groups including from 1 to 6 carbon

atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,

- a $-\text{CH}_2\text{OR}''''$ group in which R'''' represents an alkyl radical including from 1 to 4 carbon atoms or a benzyl radical, or

5

R5 and R6 can form, together with the carbon atom to which they are bonded, a ring comprising 5 to 7 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms,

10

it being understood that at least one of the R5 and R6 radicals is an optionally substituted aryl group, in the case where R'' represents hydrogen,

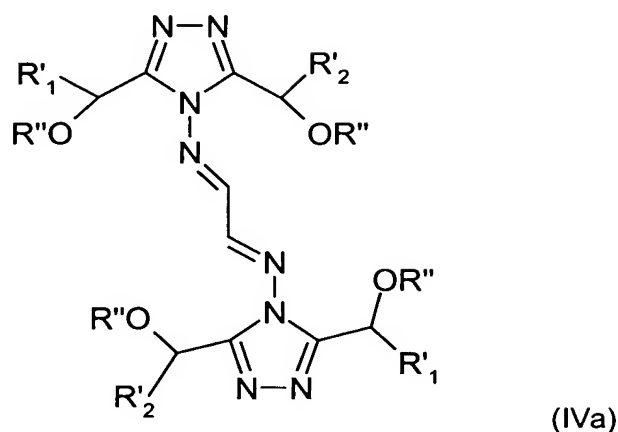
with the exception of the following compounds:

15

R'1, R'2	R''	R6	R5
CH ₃	H	p-Toluene	H
CH ₃	H	CH ₂ -Phenyl	H
CH ₃	H	Phenyl	H
CH ₃	H	p-Cl-Phenyl	H
CH ₃	H	o-Cl-Phenyl	H
CH ₃	H	Phenyl	Me
CH ₃	H	p-MeO-Phenyl	Me
CH ₃	H	m-Nitrophenyl	Me
CH ₃	H	Isopropyl	Me
CH ₃	H	tert-Butyl	Me
CH ₃	CH ₃	Phenyl	H
CH ₃	CH ₃	p-Cl-Phenyl	H
CH ₃	CH ₃	p-Toluene	H
CH ₃	C ₂ H ₅	Phenyl	H

15. As novel intermediates for preparing an amine of formula $\text{H}_2\text{N}-\text{CR}_5\text{R}_6\text{R}_7$, the following compounds of formula (IVa):

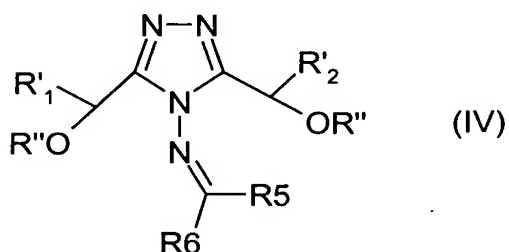
20

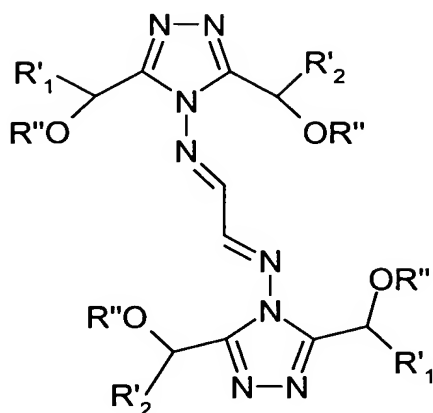


in which R'1 and R'2 represent methyl groups, and R'' represents

- 5 - a linear or branched alkyl group including from 1 to 6 carbon atoms,
- an aryl group including from 6 to 10 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms or linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups,
- 10 - an aralkyl group including from 7 to 16 carbon atoms which is optionally substituted by one or more alkoxy groups including from 1 to 6 carbon atoms, linear or branched alkyl groups including from 1 to 6 carbon atoms or phenyl groups, or
- a $-(\text{CH}_2\text{CH}_2\text{O})_n\text{R}'''$ group in which n represents an integer ranging from 1 to
- 15 4 and R''' is a linear or branched alkyl group including from 1 to 4 carbon atoms.

16. As novel intermediates for preparing an amine of formula $\text{H}_2\text{N}-\text{CR}_5\text{R}_6\text{R}_7$, the
- 20 following compounds of formulae (IV) and (IVa):





(IVa)

- N-[(S,S)-3,5-Bis(1-methoxyethyl)-1,2,4-triazol-4-yl]-2,2-dimethoxyethylimine
 - N-[(S,S)-3,5-Bis(1-methoxyethyl)-1,2,4-triazol-4-yl]butylimine
 - 5 - N-[(S,S)-3,5-Bis(1-methoxyethyl)-1,2,4-triazol-4-yl]isobutylimine
 - N-[(S,S)-3,5-Bis(1-methoxyethyl)-1,2,4-triazol-4-yl]-1-(ethoxycarbonyl)methylimine
 - N-[(S,S)-3,5-Bis(1-methoxyethyl)-1,2,4-triazol-4-yl]-1-phenylethylimine
 - N-[(S,S)-3,5-Bis(1-methoxyethyl)-1,2,4-triazol-4-yl]-1-methyl-2,2-
 - 10 dimethoxyethylimine
 - Bis[N-[(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazol-4-yl]methylimine]
 - N-[(S,S)-3,5-Bis(1-ethoxyethyl)-1,2,4-triazol-4-yl]-2,2-dimethoxyethylimine
 - N-[(S,S)-3,5-Bis(1-(2-methoxyethoxy)ethyl)-1,2,4-triazol-4-yl]-2,2-
 - 15 dimethoxyethylimine.
17. Process according to one of Claims 4 to 6 and 16, characterized in that, in addition, the stereoisomers of formula (III) or (IIIa) are separated by, optionally chiral, high performance liquid chromatography.
- 20 18. An enantiomerically pure diastereoisomer of a compound of formula (IIIa) obtained according to the process of Claim 17.
19. Process according to either of Claims 3 and 5, characterized in that, in addition,
- 25 the diastereoisomers of formula (IIa) are separated by crystallization.
20. An enantiomerically pure diastereoisomer of a compound of formula (IIa) obtained according to the process of Claim 19.

21. Enantiomerically pure 1-benzyl-4-[(R)-1-phenyl-2,2-dimethoxyethylamino]-(S,S)-3,5-bis(1-methoxyethyl)-1,2,4-triazolium bromide.